



Enhancing Road Safety Inspections: Leicestershire County Council Trials RoadMetrics AI as an Early Adopter

About Leicestershire County Council

Leicestershire County Council is responsible for the maintenance of a vast road network spanning over 4,000 km. The council, led by Daniel Rawle, sought to optimise their road condition assessments. Recognising the potential of AI in their road maintenance efforts, the council partnered to use RoadMetrics for close to 1,000 km in road condition assessment.



RoadMetrics team with Daniel Rawle,
Highway Control Manager at Leicestershire
CC

Challenges

Due to higher costs associated with traditional assessment methods, only a quarter of the road network was assessed each year, leading to a lack of information in arriving at capital maintenance budgets and identifying road hazards.

The innovation trial aimed to solve the following,

1. Limited coverage with manual inspections and SCANNER
2. Time sensitive assessments needed
3. High costs for survey equipment and assessments
4. Inconsistent and subjective assessments

Implementation

Under the guidance of Daniel Rawle and a dedicated inspector team, Leicestershire County Council undertook the condition surveys using the RoadMetrics Data Collection App. They condition surveys were performed through a staggered approach from August 2022 until February of 2023.

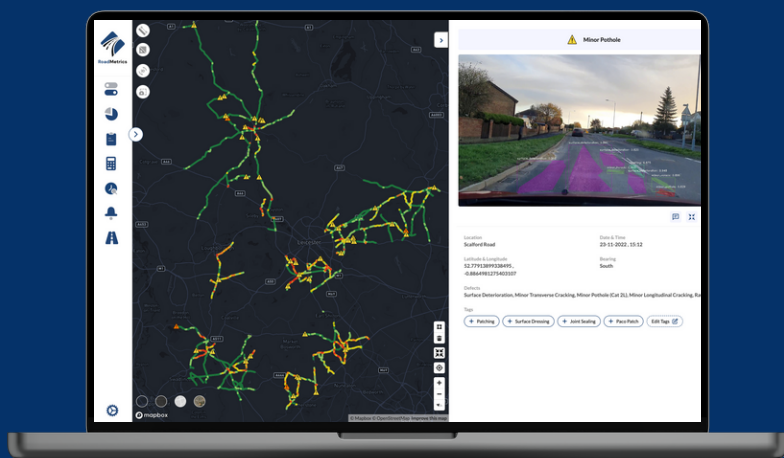
All data was uploaded using the RoadMetrics Data Collection App to RoadMetrics' secured cloud servers hosted on AWS in London.

Solution

The RoadMetrics AI system provided two unique solutions:

A smartphone based approach for condition surveys, enabling cost-effective and on-demand surveys.

Assessments performed leveraging Artificial Intelligence (AI), and presented on a cloud based web-GIS Enterprise platform for visualising and analysing condition data. All condition is exportable in popular format including HMDIF (UKPMS) and GEOJSON.



"I think with the challenges that lay ahead for local authorities in terms of resources, switching to AI to identify road defects, to manage your network and to capture data is the way forward."

*—Daniel Rawle,
Highway Control Manager,
Leicestershire County Council*

Custom AI Model

RoadMetrics developed a custom AI model for Leicestershire County Council, from a comprehensive dataset comprising of close to 1,000 km of condition surveys and over 100,000 image data points. The AI solution was trained specifically to the council's road network. These efficiency improvements from AI enables the council to make informed decisions, prioritise maintenance activities, and enhance road safety effectively.

Council Training

In a collaborative effort to enhance road condition assessment practices, RoadMetrics conducted a Continuous Professional Development (CPD) session with the Leicestershire CC's Highways Team. The CPD session aimed to familiarise participants with RoadMetrics' AI based solution by sharing some of the benefits of an AI system while taking in feedback to improve system performance.

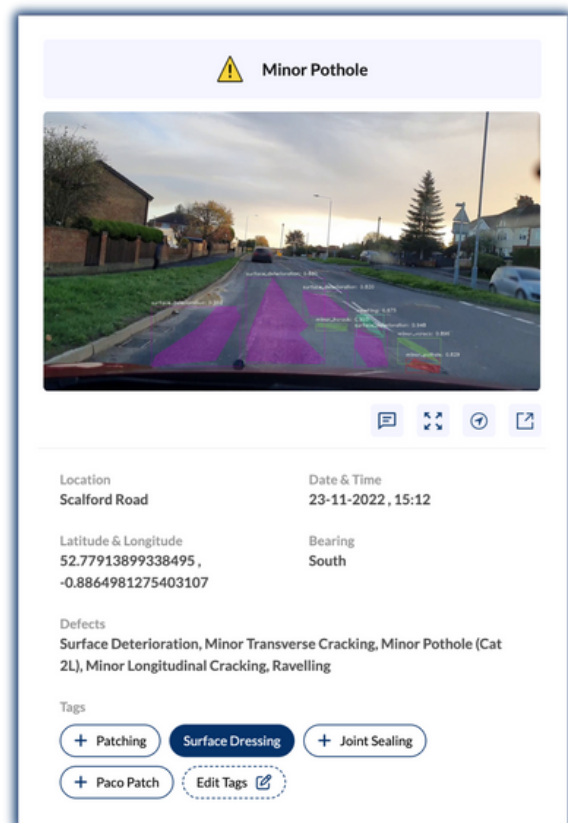


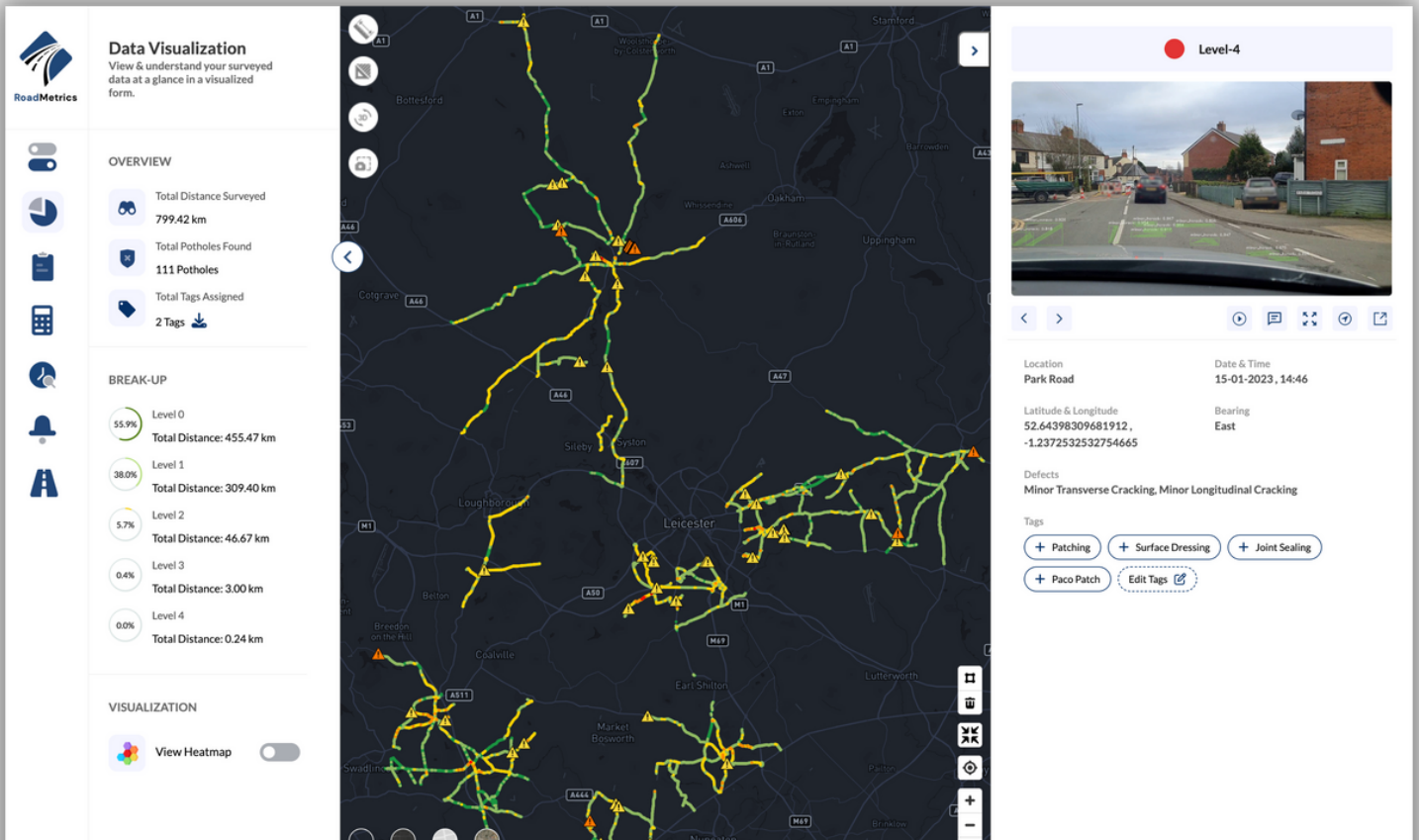
RoadMetrics team with the Highways Team at Leicestershire County Council for CPD training.

New Developments

With the specific requirements from the Highways Team for their end-to-end road monitoring efforts, RoadMetrics developed new features and functionality with feedback from Leicestershire County Council.

- **Tag system:** Tagging system to individual images for efficient maintenance planning and resource allocation.
- **New pavement classifications:** new defects added for surface deterioration, with the corresponding code number for each defect.
- **Feedback/comment section:** a text field for feedback to improve AI model performance and to facilitate internal communication.
- **Defect search functionality:** search and filter any individual defect or a cluster of defects.







Results

With the implementation of RoadMetrics AI, Leicestershire CC were able to identify significant benefits from their current road condition assessment methods. The AI system provided a comprehensive analysis of road safety factors, identifying potential hazards and areas in need of road maintenance.


Data Integration




Download Report
as *.csv*



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Download UKPMS
CVI as *.hmdif*



Download Road
Segments as *.geojson*

Benefits

- Enhanced efficiency:** RoadMetrics AI expedited the inspection process, saving valuable time and resources for Leicestershire County Council.
- Accurate analysis:** The AI system provided reliable and consistent results, minimising human error and ensuring thorough assessments.
- Cost savings:** By identifying potential maintenance requirements in advance, Leicestershire County Council achieved cost savings through proactive planning and resource allocation.

